

# CARBON TAX ACT NO. 15 OF 2019

[View Regulation]

[ASSENTED TO 22 MAY, 2019]  
[DATE OF COMMENCEMENT: 1 JUNE, 2019]

*(English text signed by the President)*

This Act has been updated to Government Gazettes 49894 and 49948 dated 22 December, 2023.

## as amended by

Taxation Laws Amendment Act, No. 34 of 2019  
[with effect from 15 January, 2020, unless otherwise indicated]

Rates and Monetary Amounts and Amendment of Revenue Laws Act, No. 22 of 2020  
Government Gazette 44082 dated 20 January, 2021  
[with effect from 20 January, 2021, unless otherwise indicated]

Taxation Laws Amendment Act, No. 23 of 2020  
Government Gazette 44083 dated 20 January, 2021  
[with effect from 20 January, 2021, unless otherwise indicated]

Rates and Monetary Amounts and Amendment of Revenue Laws Act, No. 19 of 2021  
Government Gazette 45786 dated 19 January, 2022  
[with effect from 19 January, 2022, unless otherwise indicated]

Taxation Laws Amendment Act, No. 20 of 2021  
Government Gazette 45787 dated 19 January, 2022  
[with effect from 19 January, 2022, unless otherwise indicated]

Rates and Monetary Amounts and Amendment of Revenue Laws Act, No. 19 of 2022  
Government Gazette 47825 dated 5 January, 2023  
[with effect from 5 January, 2023, unless otherwise indicated]

Taxation Laws Amendment Act, No. 20 of 2022  
Government Gazette 47826 dated 5 January, 2023  
[with effect from 5 January, 2023, unless otherwise indicated]

[Taxation Laws Amendment Act, No. 17 of 2023](#)  
[Government Gazette 49894](#) dated 22 December, 2023  
[with effect from 22 December, 2023, unless otherwise indicated]

[Rates and Monetary Amounts and Amendment of Revenue Laws Act, No. 19 of 2023](#)  
[Government Gazette 49948](#) dated 22 December, 2023  
[with effect from 22 December, 2023, unless otherwise indicated]

## ACT

**To provide for the imposition of a tax on the carbon dioxide (CO<sub>2</sub>) equivalent of greenhouse gas emissions; and to provide for matters connected therewith..**

## PREAMBLE

**SINCE** the causality of the increasing of anthropogenic greenhouse gas emissions in the atmosphere and the global climate change has been scientifically confirmed;

**AND SINCE** it has consequently become necessary to manage the inevitable climate change impact through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity;

**AND SINCE** it has also become necessary to make a contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner;

**AND SINCE** the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment (the polluter pays principle);

**AND SINCE** government is desirous to utilise a package of measures in an effort to address the challenges posed by climate change;

**AND SINCE** this package of measures will be achieved by the deployment of a range of measures to support the system of desired emissions reduction outcomes, including the appropriate pricing of carbon and economic incentives, as well as the use of emissions offsets;

**AND SINCE** government is of the view that imposing a tax on greenhouse gas emissions and concomitant measures such as providing tax incentives for rewarding the efficient use of energy will provide appropriate price signals to help nudge the economy towards a more sustainable growth path,

**BE IT THEREFORE ENACTED** by the Parliament of the Republic of South Africa, as follows—

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### PART I

#### DEFINITIONS AND GENERAL PROVISIONS RELATING TO IMPOSITION OF CARBON TAX

**1. Definitions.**—In this Act, unless the context otherwise indicates—

**“allowance”** means any amount allowed to be taken into account in terms of Part II, subject to section 14, for the purposes of determining the amount of carbon tax payable;

**“carbon budget”** means an amount of greenhouse gas emissions permitted, against which direct emissions arising from the operations of a person during a defined time period will be accounted for;

**“carbon dioxide (CO<sub>2</sub>) equivalent”** means the concentration of carbon dioxide that would cause the same amount of radiative forcing (the difference of sunlight absorbed by the Earth and energy radiated back to space) as a given mixture of carbon dioxide and other greenhouse gases;

**“carbon tax”** means a tax on the carbon dioxide (CO<sub>2</sub>) equivalent of greenhouse gas emissions imposed in terms of section 2;

**"combustion"** means the exothermic reaction of a fuel with oxygen;

**"Commissioner"** means the Commissioner for the South African Revenue Service;

**"emission factor"** means the average emission rate of a given greenhouse gas for a given source, relative to the activity data of a source stream assuming complete oxidation for combustion and complete conversion for all other chemical reactions;

**"emissions"** means—

- (a) the release of greenhouse gases or their precursors; or
- (b) the release of greenhouse gases and their precursors,

into the atmosphere, over a specified area and period of time;

**"emissions intensity"** means an indicator of the result of the measurement of the quantity of greenhouse gas emissions in relation to an activity;

**"emissions intensity benchmark"** means the result of the measurement in respect of an activity that creates greenhouse gas emissions—

- (a) expressed as a predetermined value of the quantity of specified greenhouse gas emissions;
- (b) in relation to an activity that is differentiated from other activities by means of a product, a type of fuel or a technology; and
- (c) compared against the quantity of greenhouse gas emissions,

in relation to an identical activity undertaken by another person;

**"fugitive emissions"** means emissions that are released into the atmosphere by any other means than through an intentional release through stack or vent including extraction, processing, delivery and burning for energy production of fossil fuels, including leaks from industrial plant and pipelines;

**"greenhouse gas"** means gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation, and includes carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>);

**"industrial process"** means a manufacturing process that chemically or physically transforms materials;

**"IPCC"** means the Intergovernmental Panel on Climate Change established for the purposes of providing internationally co-ordinated scientific assessments of the magnitude, timing and potential environmental and socio-economic impact of climate change by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) and endorsed by the United Nations by General Assembly Resolution 43/53 made at the 70th plenary meeting on 6 December 1988;

**"IPCC code"** means the source code in respect of an activity resulting in the emission of a greenhouse gas as stipulated in the "Guidelines for National Greenhouse Gas Inventories" (2006) issued by the IPCC;

**"Minister"** means the Minister of Finance;

**"person"** includes—

- (a) a partnership;
- (b) a trust;
- (c) a municipal entity as defined in section 1 of the Local Government: Municipal Systems Act, 2000 (Act No. 32 of 2000); and
- (d) a public entity listed in Schedules 2, 3A, 3B, 3C and 3D to the Public Finance Management Act, 1999 (Act No. 1 of 1999);
- (e) a municipality which falls within a category listed in section 155 (1) of the Constitution of the Republic of South Africa, 1996, and which is an organ of state within the local sphere of government exercising legislative and executive authority within an area determined in terms of the Local Government: Municipal Demarcation Act, 1998 (Act No. 27 of 1998);

[Para. (e) added by s. 89 (1) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

**"taxpayer"** means a person liable for the carbon tax in terms of section 3; and

**"tax period"** means a period in respect of which tax is payable as prescribed under section 16.

**2. Imposition of carbon tax.**—There must be levied and collected for the benefit of the National Revenue Fund, a tax to be known as the carbon tax.

**3. Persons subject to tax.**—A person is—

- (a) a taxpayer for the purposes of this Act; and
- (b) liable to pay an amount of carbon tax calculated as contemplated in section 6 in respect of a tax period as specified in section 16,

if that person conducts an activity in the Republic, resulting in greenhouse gas emissions, equal to or above the threshold

determined by matching the activity listed in the column "Activity/Sector" in Schedule 2 with the number in the corresponding line of the column "Threshold" of that table.

[S. 3 amended by s. 90 (1) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

**4. Tax base.**—(1) Notwithstanding subsection (2), the carbon tax must be levied in respect of the sum of the greenhouse gas emissions of a taxpayer in respect of a tax period expressed as the carbon dioxide equivalent of those greenhouse gas emissions resulting from fuel combustion and industrial processes, and fugitive emissions in accordance with an emissions determination methodology approved by the Department of Environmental Affairs.

[Sub-s. (1) substituted by s. 91 (1) (a) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

(2) Where a taxpayer uses an emissions determination methodology in respect of the sum of the greenhouse gas emissions of a taxpayer in respect of a tax period—

- (a) employing readily available statistical data on the intensity of processes (activity data) and emission factors as specified in the "IPCC Guidelines For National Greenhouse Gas Inventories" (2006)); or
- (b) employing the statistical data and emission factors as specified in paragraph (a) including country-specific emission factors,

in respect of greenhouse gas emissions resulting from fuel combustion, and industrial processes, and fugitive emissions the carbon tax must be levied in respect of the sum of the greenhouse gas emissions of a taxpayer in respect of a tax period expressed as the carbon dioxide equivalent of those greenhouse gas emissions resulting from—

- (a) fuel combustion in respect of that tax period that is a number constituted by the sum of the respective numbers determined for each type of fuel in respect of which a greenhouse gas is emitted in respect of that tax period which respective numbers must be determined in accordance with the formula:

$$E = (A \times B)$$

in which formula—

- (i) "E" represents the number to be determined;
- (ii) "A" represents the mass of any one type of the fuel expressed in tonne that is the source of the greenhouse gas emission, other than any fuel utilised for the purposes of international aviation and maritime transport;
- (iii) "B" represents the greenhouse gas emission factor in carbon dioxide equivalent per tonne that must be determined in accordance with the formula:

$$X = \{[(C \times 1) + (M \times 23) + (N \times 296)] \times D\} / Y$$

in which formula—

- (aa) "X" represents the number to be determined;
- (bb) "C" represents the carbon dioxide emissions of a fuel type determined by matching the fuel type listed in the column "fuel type" in Table 1 of Schedule 1 with the number in the corresponding line of the column "CO<sub>2</sub> (KGC<sub>2</sub>O<sub>2</sub>/TJ)" of that table;
- (cc) "M" represents the methane emissions of a fuel type determined by matching the fuel type listed in the column "fuel type" in Table 1 of Schedule 1 with the number in the corresponding line of the column "CH<sub>4</sub> (KGCH<sub>4</sub>/TJ)" of that table;
- (dd) "N" represents the Nitrous Oxide emissions of a fuel type determined by matching the fuel type listed in the column "fuel type" in Table 1 of Schedule 1 with the number in the corresponding line of the column "N<sub>2</sub>O (KGN<sub>2</sub>O/TJ)" of that table;

[Item (dd) amended by s. 91 (1) (d) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

- (ee) "D" represents the net default calorific value (terajoule per tonne) of a fuel type determined by matching the fuel type listed in the column "fuel type" in Table 1 of Schedule 1 with the number in the corresponding line of the column "DEFAULT CALORIFIC NET VALUE (TJ/TONNE)" of that table;

[Item (ee) amended by s. 91 (1) (d) of Act No. 34 of 2019 and substituted by 91 (1) (e) of Act No. 34 of 2019 both deemed to have come into operation on 1 June, 2019.]

- (ff) "Y" represents the number 1000;

[Sub-para. (iii) amended by s. 91 (1) (c) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019. Item (ff) added by s. 91 (1) (d) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

- (b) fugitive emissions that is a number constituted by the sum of the respective numbers determined for each type of commodity, fuel or technology in respect of which the greenhouse gas is emitted in respect of a tax period which respective numbers must be determined in accordance with the formula:

$$F = (N \times Q)$$

in which formula—

- (i) "F" represents the number to be determined;
- (ii) "N" represents the mass expressed in tonne in the case of solid fuels or the volume of each type of fuel expressed in cubic metres in the case of fuels other than solid fuels, in respect of the greenhouse gas

emission; and

- (iii) **"Q"** represents the greenhouse gas emission factor in carbon dioxide equivalent per tonne or cubic metres—

(aa) in the case of oil and natural gas, that must be determined in accordance with the formula:

$$X = [(C \times 1) + (M \times 23) + (N \times 296)] \times Y$$

in which formula—

(a) **"X"** represents the number to be determined;

(b) **"C"** represents the carbon dioxide emissions of a fuel type determined by matching the fuel type listed in the column "fuel type" in Table 2 of Schedule 1 with the number in the corresponding line of the column "CO<sub>2</sub>" of that table;

(c) **"M"** represents the methane emissions of a fuel type determined by matching the fuel type listed in the column "fuel type" in Table 2 of Schedule 1 with the number in the corresponding line of the column "CH<sub>4</sub>" of that table;

(d) **"N"** represents the Nitrous Oxide emissions of a fuel type determined by matching the fuel type listed in the column "fuel type" in Table 2 of Schedule 1 with the number in the corresponding line of the column "N<sub>2</sub>O" of that table;

(e) **"Y"** represents the number 1000; and

(bb) in the case of coal mining and handling, that must be determined in accordance with the formula:

$$X = (M \times D \times 23) \times Y$$

in which formula—

(a) **"X"** represents the number to be determined;

(b) **"M"** represents the methane emissions of a fuel type determined by matching the fuel type listed in the column "fuel type" in Table 2 of Schedule 1 with the number in the corresponding line of the column "CH<sub>4</sub>" of that table;

(c) **"D"** represents the density factor for coal mining and handling methane emissions (0.67 x 10<sup>-6</sup> Gg/m<sup>3</sup>);

(d) **"Y"** represents the number 1000; and

[Item (iii) substituted by s. 91 (1) (f) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

- (c) industrial process in respect of a tax period that is a number constituted by the sum of the respective numbers determined for each type of commodity, fuel or technology in respect of which the greenhouse gas is emitted in respect of that tax period which respective numbers must be determined in accordance with the formula:

$$P = (G \times H)$$

in which formula—

(i) **"P"** represents the amount to be determined that must not be less than zero;

(ii) **"G"** represents the mass of each raw material used or product produced expressed in tonne in respect of which the greenhouse gas is emitted in respect of that tax period; and

(iii) **"H"** represents the greenhouse gas emission factor in carbon dioxide emissions equivalent per tonne for each raw material used or product produced that must be determined in accordance with the formula:

$$X = (C \times 1) + (M \times 23) + (N \times 296) + (H \times 11\,900) + (T \times 5\,700) + (S \times 22\,200)$$

in which formula—

(aa) **"X"** represents the number to be determined;

(bb) **"C"** represents the carbon dioxide emissions of a raw material or product determined by matching the fuel type listed in the column "SOURCE CATEGORY ACTIVITY/RAW MATERIAL/PRODUCT" in Table 3 of Schedule 1 with the number in the corresponding line of the column **"tonneCO<sub>2</sub>/tonne product"** of that table;

[Item (bb) substituted by s. 91 (1) (g) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

(cc) **"M"** represents the methane emissions of a raw material or product determined by matching the fuel type listed in the column "SOURCE CATEGORY ACTIVITY/RAW MATERIAL/PRODUCT" in Table 3 of Schedule 1 with the number in the corresponding line of the column **"tonneCH<sub>4</sub>/tonne product"** of that table;

[Item (cc) substituted by s. 91 (1) (g) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

(dd) **"N"** represents the Nitrous Oxide emissions of a raw material or product determined by matching the fuel type listed in the column "SOURCE CATEGORY ACTIVITY/RAW MATERIAL/PRODUCT" in Table 3 of Schedule 1 with the number in the corresponding line of the column **"tonneN<sub>2</sub>O/ tonne"**

**product”** of that table;

[Item (dd) substituted by s. 91 (1) (g) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

- (ee) **“H”** represents the Hexafluoroethane (C<sub>2</sub>F<sub>6</sub>) emissions of a raw material or product determined by matching the fuel type listed in the column “SOURCE CATEGORY ACTIVITY/RAW MATERIAL/PRODUCT” in Table 3 of Schedule 1 with the number in the corresponding line of the column **“tonneC<sub>2</sub>F<sub>6</sub>/tonne product”** of that table;

[Item (ee) substituted by s. 91 (1) (g) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

- (ff) **“T”** represents the carbon tetrafluoride (CF<sub>4</sub>) emissions of a raw material or product determined by matching the fuel type listed in the column “SOURCE CATEGORY ACTIVITY/RAW MATERIAL/PRODUCT” in Table 3 of Schedule 1 with the number in the corresponding line of the column **“tonneCF<sub>4</sub>/tonne product”** of that table; and

[Item (ff) substituted by s. 91 (1) (g) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

- (gg) **“S”** represents the Sulphur hexafluoride (SF<sub>6</sub>) emissions of a raw material or product determined by matching the fuel type listed in the column “SOURCE CATEGORY ACTIVITY/RAW MATERIAL/PRODUCT” in Table 3 of Schedule 1 with the number in the corresponding line of the column **“tonneSF<sub>6</sub>/tonne product”** of that table.

[Sub-s. (2) amended by s. 91 (1) (b) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019. Item (gg) substituted by s. 91 (1) (g) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

**5. Rate of tax.**—(1) The rate of the carbon tax on greenhouse gas emissions must, subject to subsections (2) and (3), be imposed at an amount of R159 per ton carbon dioxide equivalent of the greenhouse gas emissions of a taxpayer.

[Sub-s. (1) substituted by s. 10 (1) of Act No. 22 of 2020, by s. 6 (1) of Act No. 19 of 2021, by s. 7 (1) of Act No. 19 of 2022 and by s. 8 (1) of Act No. 19 of 2023 deemed to have come into operation on 1 January, 2023.]

(2) The rate of tax specified in subsection (1) must be increased to the amount of —

- (a) R159 for tax periods from 1 January 2023 until 31 December 2023;
- (b) R190 for tax periods from 1 January 2024 until 31 December 2024; and
- (c) R236 for tax periods from 1 January 2025 until 31 December 2025.

[Sub-s. (2) substituted by s. 92 (1) of Act No. 34 of 2019 and by s. 38 (1) (a) of Act No. 20 of 2022 with effect from 1 January, 2023.]

(2A) The rate of tax specified in subsection (1) must be increased to the amount of R308 for tax periods from 1 January 2026 until 31 December 2026.

[Sub-s. (2A) inserted by s. 38 (1) (b) of Act No. 20 of 2022 with effect from 1 January, 2023.]

(2B) The rate of tax specified in subsection (1) must be increased to the amount of—

- (a) R347 for tax periods from 1 January 2027 until 31 December 2027;
- (b) R385 for tax periods from 1 January 2028 until 31 December 2028 and
- (c) R424 for tax periods from 1 January 2029 until 31 December 2029.

[Sub-s. (2B) inserted by s. 38 (1) (b) of Act No. 20 of 2022 with effect from 1 January, 2023.]

(2C) The rate of tax specified in subsection (1) must be increased to the amount of R462 for tax periods from 1 January 2030 until 31 December 2030.

[Sub-s. (2C) inserted by s. 38 (1) (b) of Act No. 20 of 2022 with effect from 1 January, 2023.]

(3) The rate of tax must be increased after 31 December 2030 by the amount announced by the Minister in the national annual budget contemplated in section 27 (1) of the Public Finance Management Act, 1999 (Act No. 1 of 1999).

[Sub-s. (3) substituted by s. 92 (1) of Act No. 34 of 2019 and by s. 38 (1) (c) of Act No. 20 of 2022 with effect from 1 January, 2023.]

(4) The rate of tax specified in subsection (1) may be adjusted by the amount announced by the Minister in the national annual budget contemplated in section 27 (1) of the Public Finance Management Act, 1999, (Act No. 1 of 1999), in 2025 and thereafter at three-year intervals to take into account the impact of exchange rate movements on the comparability of the rate to global carbon pricing.

[Sub-s. (4) added by s. 38 (1) (d) of Act No. 20 of 2022 with effect from 1 January, 2023.]

**6. Calculation of amount of tax payable.**—(1) Subject to subsections (2) and (3), the amount of tax payable by a taxpayer in respect of a tax period must be calculated in accordance with the formula—

$$X = \{[(E - S) \times (1 - C)] - [D \times (1 - M)]\} + \{P \times (1 - J)\} + \{F \times (1 - K)\} \times R$$

in which formula—

- (a) **“X”** represents the amount to be determined that must not be less than zero;
- (b) **“E”** represents the number in respect of the total fuel combustion related greenhouse gas emissions of the taxpayer in respect of that tax period expressed as a carbon dioxide equivalent determined in terms of section 4 (1) or (2) (a);

- (c) **"S"** represents the number in respect of greenhouse gas emissions, expressed in terms of carbon dioxide equivalent that were sequestered in respect of that tax period as verified and certified by the Department of Environmental Affairs;
- (d) **"C"** represents a number equal to the sum of the percentages of allowances determined under sections 7, 10, 11, 12, and 13 in respect of that tax period, subject to section 14;
- (e) **"D"** represents the number in respect of the petrol and diesel related greenhouse gas emissions of that taxpayer in respect of that tax period expressed as a carbon dioxide equivalent, determined in terms of section 4 (1) or (2) (a);
- (f) **"M"** represents a number equal to the sum of the percentages of the allowances determined under sections 7, 12 and 13 in respect of that tax period, subject to section 14;
- (g) **"P"** represents the number in respect of the total industrial process related greenhouse gas emissions of the taxpayer in respect of that tax period expressed as a carbon dioxide equivalent determined in terms of section 4 (1) or (2) (c);
- (h) **"J"** represents a number equal to the sum of the percentages of the allowances determined under sections 7, 8, 10, 11, 12 and 13 in respect of that tax period, subject to section 14;  
[Para. (h) substituted by s. 93 (1) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]
- (i) **"F"** represents the number in respect of the total fugitive greenhouse gas emissions of the taxpayer in respect of that tax period expressed as a carbon dioxide equivalent determined in terms of section 4 (1) or (2) (b);
- (j) **"K"** represents the sum of the percentages of the allowances determined in terms of sections 7, 9, 10, 11, 12 and 13 in respect of that tax period, subject to section 14; and
- (k) **"R"** represents the rate of tax prescribed under section 5:

Provided that where the number in respect of the determination of the expression **"(E-S)"** in the formula is less than zero, that number must be deemed to be zero.

[Sub-s. (1) amended by s. 77 (1) (a) of Act No. 23 of 2020 deemed to have come into operation on 1 January, 2020.]

(2) The amount of tax payable by a taxpayer in respect of the generation of electricity from fossil fuels conducting activities under the IPCC codes 1A1 for energy industries (including heat and electricity recovery from Waste), 1A2 for manufacturing industries and construction (including heat and electricity recovery from Waste) and 1A4 for other sectors (including heat and electricity recovery from Waste) in respect of a tax period must be calculated in accordance with the formula:

$$X = A - B - C$$

in which formula—

- (a) **"X"** represents the amount to be determined that must not be less than zero;
- (b) **"A"** represents the amount of tax payable in respect of a tax period determined in terms of subsection (1);
- (c) **"B"** represents an amount equal to the quantity of renewable electricity (kWh) purchased under a power purchase agreement multiplied by the renewable energy premium determined by the Minister by notice in the *Gazette* in respect of a tax period, until 31 December 2025; and

[Para. (c) substituted by s. 63 (1) (a) of Act No. 20 of 2021 and by s. 39 (1) (b) of Act No. 20 of 2022 with effect from 1 January, 2023.]

(Editorial Note: Wording as per original *Government Gazette*. It is suggested that **"B"** is intended to be **"S"**.)

- (d) **"C"** represents an amount equal to the environmental levy contemplated in respect of electricity generated in the Republic in Section B of Part 3 of Schedule 1 to the Customs and Excise Act, 1964 (Act No. 91 of 1964), paid in respect of a tax year, until 31 December 2025.

[Sub-s. (2) amended by s. 39 (1) (a) of Act No. 20 of 2022 with effect from 1 January, 2023. Para. (d) substituted by s. 39 (1) (c) of Act No. 20 of 2022 with effect from 1 January, 2023.]

(3) The amount of tax payable by a taxpayer that is a petroleum refinery in respect of a tax period must be calculated in accordance with the formula—

$$X = A - (B \times P)$$

in which formula—

- (a) **"X"** represents the amount to be determined that must not be less than zero;
- (b) **"A"** represents the amount of tax payable in respect of a tax period determined in terms of subsection (1);
- (c) **"B"** represents an amount of 0.66 cents per litre;

[Para. (c) substituted by s. 8 (1) of Act No. 19 of 2022 and by s. 9 (1) of Act No. 19 of 2023 deemed to have come into operation on 1 January, 2023.]

- (d) **"P"** represents the total amount of petrol produced expressed in litres.

[Sub-s. (3) added by s. 77 (1) (b) of Act No. 23 of 2020 deemed to have come into operation on 1 January, 2020.]

- (4) For the purposes of this section **"sequesterate"** means—

- (a) the process of storing a greenhouse gas in forestry plantations and harvested wood products within the operational control of the taxpayer in respect of fuel combustion emissions declared in terms of IPCC codes 1A2d for pulp, paper and print and 1A2j for wood and wood products in terms of section 4 (1); or
- (b) the process of storing a greenhouse gas in forestry plantations and harvested wood products within the operational control of the taxpayer in respect of fuel combustion emissions declared in terms of IPCC codes 1A2d for pulp, paper and print and 1A2j for wood and wood products or increasing the carbon content of a carbon reservoir other than the atmosphere in respect of fuel combustion emissions declared in terms of section 4 (2) (a).

[Sub-s. (4) substituted by s. 63 (1) (b) of Act No. 20 of 2021 and by s. 39 (1) (d) of Act No. 20 of 2022 deemed to have come into operation on 1 January, 2022.]

## PART II ALLOWANCES

**7. Basic tax-free allowance.**—(1) A taxpayer that conducts an activity that is listed in Schedule 2 in the column “Activity/Sector” must receive an allowance in respect of those emissions, determined in terms of subsection (2).

(2) The percentage of the allowance referred to in subsection (1) must be calculated by matching the line in which the activity is contained in the column “Activity/Sector” with the corresponding line in the column “Basic tax-free allowance %” in Schedule 2 of the total percentage of greenhouse gas emissions in respect of a tax period in respect of that activity.

[S. 7 substituted by s. 94 (1) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

**8. Allowance for industrial process emissions.**—(1) A taxpayer that conducts an activity in respect of industrial process emissions that is listed in Schedule 2 in the column “Activity/Sector” must receive an allowance in respect of those emissions, determined in terms of subsection (2).

(2) The percentage of the allowance referred to in subsection (1) must be 10 per cent of the total greenhouse gas emissions in respect of a tax period in respect of that activity.

[Sub-s. (2) substituted by s. 95 (1) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

**9. Allowance in respect of fugitive emissions.**—A taxpayer that conducts an activity that is listed in Schedule 2 in the column “Activity/Sector” must receive an allowance in respect of fugitive emissions equal to 10 per cent of the total greenhouse gas emissions in respect of the tax period in respect of that activity.

[S. 9 substituted by s. 96 (1) of Act No. 34 of 2019 deemed to have come into operation on 1 June, 2019.]

**10. Trade exposure allowance.**—A taxpayer that is liable for the carbon tax in respect of greenhouse gas emissions must receive an allowance up to a maximum of ten per cent in respect of trade exposure as measured by value of exports plus imports divided by the total production by sector or subsector that must be determined in a manner prescribed by the Minister by regulation.

**11. Performance allowance.**—(1) A taxpayer that has implemented measures to reduce the greenhouse gas emissions of that taxpayer in respect of a tax period must receive an allowance in respect of that tax period not exceeding five per cent of the total greenhouse gas emissions of that taxpayer during that tax period determined in accordance with the formula:

$$Z = (A / B - C) \times D$$

in which formula—

- (a) “Z” represents the percentage to be determined that must not be less than zero;
- (b) “A” represents—
  - (i) the sector or sub-sector greenhouse gas emissions intensity benchmark as prescribed by the Minister; or
  - (ii) where no value is prescribed as required by subparagraph (i), the number zero;
- (c) “B” represents the measured and verified greenhouse gas emissions intensity of a taxpayer in respect of a tax period;
- (d) “C” represents the number one; and
- (e) “D” represents the number 100.

(2) For the purposes of this section “measures” include action taken to reduce greenhouse gas emissions in respect of a tax period.

**12. Carbon budget allowance.**—(1) Subject to subsection (2), a taxpayer that conducts an activity that is listed in Schedule 2 in the column ‘Activity/Sector’ and participates in the carbon budget system from 1 January 2021 to 31 December 2024, must receive an additional allowance of five per cent of the total greenhouse gas emissions in respect of a tax period.

[Sub-s. (1) substituted by s. 64 (1) of Act No. 20 of 2021 and by s. 66 (1) of Act No. 17 of 2023 deemed to have come into operation on 1 January 2023.]

(2) A taxpayer must only receive the allowance as contemplated in subsection (1) if the Department of Environmental Affairs confirms in writing that that taxpayer is participating in the carbon budget system as referred to in subsection (1).

**13. Offset allowance.**—(1) Subject to subsection (2), a taxpayer may reduce the amount in respect of the carbon tax for which the taxpayer is liable in respect of a tax period by utilising carbon offsets as prescribed by the Minister.



(2) The reduction of the liability for the carbon tax allowed in terms of subsection (1) must not exceed so much of the percentage of the total greenhouse gas emissions of a taxpayer in respect of a tax period as is determined by matching the line in the column "Activity/Sector" with the percentage in the corresponding line of the column "Offsets allowance %" in Schedule 2.

### PART III LIMITATION OF ALLOWANCES

**14. Limitation of sum of allowances.**—A taxpayer, other than a taxpayer in respect of which the maximum total allowance stipulated Schedule 2 constitutes 100 per cent, must only receive the sum of the allowances contemplated in Part II in respect of a tax period to the extent that the sum of those allowances does not exceed 95 per cent of the total greenhouse gas emissions of that taxpayer in respect of that tax period as determined in terms of the column "Maximum total allowances %" in Schedule 2.

### PART IV ADMINISTRATION, TAX PERIOD AND PAYMENT OF TAX

**15. Administration.**—(1) The Commissioner must administer the provisions of this Act as if the carbon tax were an environmental levy as contemplated in section 54A of the Customs and Excise Act, 1964 (Act No. 91 of 1964), that must be collected and paid in terms of the provisions of that Act.

(2) For the purposes of subsection (1), administrative actions, requirements and procedures for purposes of submission and verification of accounts, collection and payment of the carbon tax as an environmental levy or the performance of any duty, power or obligation or the exercise of any right in terms of this Act are, to the extent not regulated in this Act, regulated by the Customs and Excise Act, 1964.

**16. Tax period.**—(1) A taxpayer must pay the carbon tax for every tax period.

(2) A tax period in relation to a taxpayer is—

- (a) commencing on 1 June 2019 and ending on 31 December 2019; and
- (b) subsequent to the period contemplated in paragraph (a), the period commencing on 1 January of each year and ending on 31 December of that year.

**17. Payment of tax.**—A taxpayer must submit yearly environmental levy accounts and payments as prescribed by rule in terms of the Customs and Excise Act, 1964 (Act No. 91 of 1964), for every tax period.

### PART V MISCELLANEOUS

**18. Reporting.**—Despite Chapter 6 of the Tax Administration Act, the Commissioner must annually submit to the Minister a report, in the form and manner that the Minister may prescribe, within six months from the date of submission of environmental levy accounts and payments contemplated in section 17 advising the Minister in respect of that tax period of—

- (a) the total amount of greenhouse gas emissions reported in respect of which taxpayers are liable for the carbon tax; and
- (b) the amount of carbon tax collected.

**19. Regulations.**—The Minister must make regulations in respect of—

- (a) the sector or sub-sector greenhouse gas emissions intensity benchmark for the purposes of symbol "A" in section 11 (1);
- (b) the manner of determining the amount of the trade exposure allowance contemplated in section 10; and
- (c) carbon offsets contemplated in section 13 regarding—
  - (i) the projects or activities in respect of which an offset is generated;
  - (ii) the limitation on the carbon offset allowance;
  - (iii) offset duration periods;
  - (iv) the institution, board or body that must administer the offset allowance;
  - (v) the powers and responsibilities of the institution, board or body contemplated in subparagraph (iv);
  - (iv) the procedure that must be followed in claiming the offset allowance;
  - (vi) the records that must be kept in respect of administering the offset allowance; and
  - (vii) any other matter necessary for the regulation of the utilisation of the carbon offsets.

(Editorial Note: Numbering as per the original *Government Gazettes*.)

**20. Amendment of laws.**—The Customs and Excise Act, 1964 (Act No. 91 of 1964), is hereby amended to the extent set out in Schedule 3.

**21. Short title and commencement.**—This Act is called the Carbon Tax Act, 2019, and comes into operation on 1 June 2019.

## SCHEDULE 1

**TABLE 1**  
**FUEL COMBUSTION EMISSION FACTORS**  
**STATIONARY SOURCE CATEGORY**

[Table 1 amended by s. 98 of Act No. 34 of 2019.]

FUEL TYPE	CO <sub>2</sub> (KGCO <sub>2</sub> /TJ)	CH <sub>4</sub> (KGCH <sub>4</sub> /TJ)	N <sub>2</sub> O (KGN <sub>2</sub> O/TJ)	DEFAULT NET CALORIFIC VALUE (TJ/TONNE)		
				NET CALORIFIC VALUE	LOWER LIMIT OF THE 95% CONFIDENCE INTERVAL	UPPER LIMIT OF THE 95% CONFIDENCE INTERVAL
ANTHRACITE	98 300	1	1.5	0.0267	0.0216	0.0322
AVIATION GASOLINE	70 000	3	0.6	0.0443	0.0425	0.0448
BIODIESEL	0	3	0.6	0.027	0.0136	0.054
BIOGASOLINE	0	3	0.6	0.027	0.0136	0.054
BITUMEN	80 700	3	0.6	0.0402	0.0335	0.0412
BLAST FURNACE GAS	260 000	1	0.1	0.00247	0.0012	0.005
DIESEL	74 100	3	0.6	0.043	0.0414	0.0433
BROWN COAL BRIQUETTES	97 500	1	1.5	0.0207	0.0151	0.032
CHARCOAL	0	200	4	0.0295	0.0149	0.058
COAL TAR	80 700	1	1.5	0.028	0.0141	0.055
COKE OVEN COKE AND LIGNITE COKE	107 000	1	1.5	0.0282	0.0251	0.0302
COKE OVEN GAS	44 400	1	0.1	0.0387	0.0196	0.077
COKING COAL	94 600	1	1.5	0.0282	0.024	0.031
CRUDE OIL	73 300	3	0.6	0.0438	0.0401	0.0448
DIESEL	74 100	3	0.6	0.0381	0	0
ETHANE	61 600	1	0.1	0.0464	0.0449	0.0488
GAS COKE	107 000	1	0.1	0.0173	0.0251	0.0302
GAS WORKS GAS	44 400	1	0.1	0.0387	0.0196	0.077
INDUSTRIAL WASTES	143 000	30	4	N/A	N/A	N/A
JET GASOLINE	70 000	3	0.6	0.0443	0.0425	0.0448
JET KEROSENE	71 500	3	0.6	0.0441	0.042	0.045
LANDFILL GAS	0	1	0.1	0.0504	0.0254	0.1
LIGNITE	101 000	1	1.5	0.0119	0.0055	0.0216
LIQUEFIED PETROLEUM GASES	63 100	1	0.1	0.0473	0.0448	0.0522
LUBRICANTS	73 300	3	0.6	0.0402	0.0335	0.0423
MUNICIPAL WASTES (BIOMASS FRACTION)	0	30	4	0.0116	0.0068	0.018
MUNICIPAL WASTES (NON BIOMASS FRACTION)	91 700	30	4	0.01	0.007	0.018
NAPHTHA	73 700	3	0.6	0.0445	0.0418	0.0465
NATURAL GAS	56 100	1	0.1	0.048	0.0465	0.0504
NATURAL GAS LIQUIDS	64 200	3	0.6	0.041	0.0409	0.0469
OIL SHALE AND TAR SANDS	107 000	1	1.5	0.0089	0.0071	0.0111
ORIMULSION	77 000	3	0.6	0.0275	0.0275	0.0283
OTHER BIOGAS	0	1	0.1	0.0504	0.0254	0.1
OTHER BITUMINOUS COAL	94 600	1	1.5	0.0243	0.0199	0.0305
OTHER KEROSENE	71 900	3	0.6	0.037	0	0
OTHER LIQUID BIOFUELS	0	3	0.6	0.0274	0.0138	0.054
OTHER PETROLEUM PRODUCTS	73 300	3	0.6	0.0402	0.0337	0.0482
OTHER PRIMARY SOLID BIOMASS	0	30	4	0.0116	0.0059	0.023
OXYGEN STEEL FURNACE GAS	182 000	1	0.1	0.00706	0.0038	0.015

PARAFFIN	71 900	3	0.6	0.0438	0.0424	0.0452
PARAFFIN WAXES	73 300	3	0.6	0.0402	0.0337	0.0482
PATENT FUEL	97 500	1	1.5	0.0207	0.0151	0.032
PEAT	0	1	1.5	0.00976	0.0078	0.0125
PETROL	69 300	3	0.6	0.0443	0.0425	0.0448
PETROLEUM COKE	97 500	3	0.6	0.0325	0.0297	0.0419
REFINERY FEEDSTOCK	73 300	3	0.6	0.043	0.0363	0.0464
REFINERY GAS	57 600	1	0.1	0.0495	0.0475	0.0506
RESIDUAL FUEL OIL (HEAVY FUEL OIL)	77 400	3	0.6	0.0404	0.0398	0.0417
SHALE OIL	73 300	3	0.6	0.0381	0.0321	0.0452
SLUDGE GAS	0	1	0.1	0.0504	0.0254	0.1
SUB-BITUMINOUS COAL	96 100	1	1.5	0.0192	0.0115	0.026
SULPHITE LYES (BLACK LIQUOR)	0	3	2	0.0118	0.0059	0.023
WASTE OILS	73 300	30	4	0.0402	0.0203	0.08
WHITE SPIRIT AND SBP	73 300	3	0.6	0.0402	0.0337	0.0482
WOOD/WOOD WASTE	0	30	4	0.0156	0.0079	0.031

NON-STATIONARY/MOBILE SOURCE CATEGORY ACTIVITY

FUEL TYPE	CO <sub>2</sub> (KGCO <sub>2</sub> /TJ)	CH <sub>4</sub> (KGCH <sub>4</sub> /TJ)	N <sub>2</sub> O (KGN <sub>2</sub> O/TJ)	DEFAULT NET CALORIFIC VALUE (TJ/TONNE)		
				NET CALORIFIC VALUE	LOWER LIMIT OF THE 95% CONFIDENCE INTERVAL	UPPER LIMIT OF THE 95% CONFIDENCE INTERVAL
AVIATION GASOLINE	70 000	3	0.6	0.0443	0.0425	0.0448
COMPRESSED NATURAL GAS	56 100	92	3	N/A	N/A	N/A
DIESEL	74 100	4.15	28.6	0.0381	0	0
DIESEL — (OCEAN-GOING SHIPS)	74 100	7	2	0.0381	0	0
DIESEL — RAIL	74 100	4.5	28.6	0.0381	0	0
JET KEROSENE	71 500	0.5	2	0.0441	0.042	0.045
KEROSENE	71 500	3	0.6	0.037	0	0
LIQUIFIED NATURAL GASES	56 100	92	3	N/A	N/A	N/A
LIQUEFIED PETROLEUM GASES	63 100	62	0.2	0.0473	0.0448	0.0522
LUBRICANTS	73 300	3	0.6	0.0402	0.0335	0.0423
NATURAL GAS	56 100	92	3	0.048	0.0465	0.0504
(PARAFFIN) OTHER KEROSENE	71 900	3	0.6	0.0438	0.0424	0.0452
OTHER PETROLEUM PRODUCTS	73 300	3	0.6	0.0402	0.0337	0.0482
PARAFFIN WAXES	73 300	3	0.6	0.0402	0.0337	0.0482
PETROL	69 300	3.5	5.7	0.0443	0.0425	0.0448
REFINERY GAS	57 600	1	0.1	0.0495	0.0475	0.0506
RESIDUAL FUEL OIL— (HEAVY FUEL OIL)	77 400	7	2	0.0404	0.0398	0.0417
SUB-BITUMINOUS COAL	96 100	2	1.5	0.0192	0.0115	0.026
WHITE SPIRIT AND SBP	73 300	3	0.6	0.0402	0.0337	0.0482

SCHEDULE 1

TABLE 2  
FUGITIVE EMISSION FACTORS

[Table 2 substituted by s. 67(1) of Act No. 17 of 2023 deemed to have come into operation on 1 June, 2019.]

IPCC Code	SOURCE CATEGORY ACTIVITY	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
1B1	SOLID FUELS (M <sup>3</sup> / TONNE)			
1B1a	COAL MINING AND HANDLING			
1B1ai	UNDERGROUND COAL MINING	0.000077	0.00077	

	UNDERGROUND POST-MINING (HANDLING & TRANSPORT)	0.000018	0.00018	
1B1aii	SURFACE COAL MINING	N/A	0	
	SURFACE POST-MINING (STORAGE AND TRANSPORT)	N/A	0	
1B1c2	Charcoal production (Fuel wood input) (kgCH <sub>4</sub> /TJ)	N/A	0.300	
	Charcoal production (Charcoal produced) (kgCH <sub>4</sub> /TJ)	N/A	1.000	
1B2	<b>OIL AND NATURAL GAS (Gg/103M<sup>3</sup> TOTAL OIL PRODUCTION)</b>			
1B2b	<b>NATURAL GAS</b>			
1B2b	<b>FLARING AND VENTING</b>			
1.B.2.b.ii	WELL DRILLING	0.0000001	0.000000033	ND
1.B.2.b.ii	WELL TESTING	0.000009	0.000000051	0.000000000068
1.B.2.b.ii	WELL SERVICING	0.0000000019	0.00000011	ND
1B2b	<b>GAS PRODUCTION (Gg/106M<sup>3</sup> TOTAL OIL PRODUCTION)</b>			
1.B.2.b.iii.2	FUGITIVES	1.40E- <sup>05</sup> to 8.20E- <sup>05</sup>	3.80E- <sup>04</sup> to 2.30E- <sup>03</sup>	N/A
1.B.2.b.ii	FLARING	0.0012	0.00000076	0.000000021
	<b>GAS PROCESSING (Gg/106M<sup>3</sup> RAW GAS FEED)</b>			
1.B.2.b.iii.3	SWEET GAS PLANTS—FUGITIVES	1.50E- <sup>04</sup> to 3.20E- <sup>04</sup>	4.80E- <sup>04</sup> to 1.03E- <sup>03</sup>	N/A
1.B.2.b.ii	SWEET GAS PLANTS—FLARING	0.0018	0.0000012	0.000000025
1.B.2.b.iii.3	SOUR GAS PLANTS—FUGITIVES	0.0000079	0.000097	N/A
1.B.2.b.ii	SOUR GAS PLANTS—FLARING	0.0036	0.0000024	0.000000054
1.B.2.b.i	SOUR GAS PLANTS—RAW CO <sub>2</sub> VENTING	0.063	N/A	N/A
1.B.2.b.iii.3	DEEP CUT EXTRACTION—FUGITIVES	0.0000016	0.000011	N/A
1.B.2.b.ii	DEEP CUT EXTRACTION—FLARING	0.00011	0.000000072	0.000000012
1.B.2.b.iii.3	DEFAULT—FUGITIVES	1.20E- <sup>05</sup> to 3.20E- <sup>04</sup>	1.50E- <sup>04</sup> to 1.03E- <sup>03</sup>	N/A
1.B.2.b.ii	DEFAULT—FLARING	0.003	0.000002	0.000000033
1.B.2.b.i	DEFAULT—RAW CO <sub>2</sub> VENTING	0.04	N/A	N/A
1B2b	<b>GAS TRANSMISSION &amp; STORAGE (Gg-CO<sub>2</sub>/year/km</b>			
1.B.2.b.iii.4	TRANSMISSION—FUGITIVES	0.000000016	0.0000025	N/A
1.B.2.b.i	TRANSMISSION—VENTING	0.0000000085	0.0000010	N/A
1.B.2.b.iii.4	STORAGE (Gg-CO <sub>2</sub> /year/M <sup>3</sup> )		2.32E- <sup>12</sup>	ND
1B2b	<b>GAS DISTRIBUTION (Gg/106M<sup>3</sup> OF UTILITY SALES)</b>			
1.B.2.b.iii.5	ALL	0.000051	0.0011	ND
1B2b	<b>NATURAL GAS LIQUIDS TRANSPORT (Gg/ 103M<sup>3</sup> CONDENSATE AND PENTANES PLUS)</b>			
1.B.2.a.iii.3	CONDENSATE	0.0000000072	0.00000011	
1.B.2.a.iii.3	LIQUEFIED PETROLEUM GAS (Gg/103M <sup>3</sup> LPG)	0.00000043	N/A	2.2 0E- <sup>12</sup>
1.B.2.a.iii.3	LIQUEFIED NATURAL GAS (Gg/106M <sup>3</sup> MARKETABLE GAS)	ND	ND	ND
1B2a	OIL			
1B2a	<b>OIL PRODUCTION (Gg/ 103M<sup>3</sup> CONVENTIONAL OIL PRODUCTION)</b>			
1.B.2.a.iii.2	CONVENTIONAL OIL—FUGITIVES (ONSHORE)	1.10E- <sup>10</sup> to 2.60E- <sup>07</sup>	1.50E- <sup>09</sup> to 3.60E- <sup>06</sup>	N/A
1.B.2.a.iii.2	CONVENTIONAL OIL—FUGITIVES (OFFSHORE)	0.000000000043	0.00000000059	N/A
1.B.2.a.i	CONVENTIONAL OIL—VENTING	0.000000095	0.00000072	N/A
1.B.2.a.ii	CONVENTIONAL OIL—FLARING	0.000041	0.000000025	0.00000000064
1B2a	<b>OIL PRODUCTION (Gg/ 103M<sup>3</sup> HEAVY OIL PRODUCTION)</b>			
1.B.2.a.iii.2	HEAVY OIL/COLD BITUMEN—FUGITIVES	0.00000054	0.0000079	N/A
1.B.2.a.i	HEAVY OIL/COLD BITUMEN—VENTING	0.0000053	0.000017	N/A
1.B.2.a.ii	HEAVY OIL/COLD BITUMEN—FLARING	0.000022	0.00000014	0.00000000046
1B2a	<b>OIL PRODUCTION (Gg/ 103M<sup>3</sup> THERMAL BITUMEN PRODUCTION)</b>			
1.B.2.a.iii.2	THERMAL OIL PRODUCTION—FUGITIVES	0.000000029	0.00000018	N/A
1.B.2.a.i	THERMAL OIL PRODUCTION—VENTING	0.00000022	0.0000035	N/A
1.B.2.a.ii	THERMAL OIL PRODUCTION—FLARING	0.000027	0.000000016	0.00000000024
1B2a	<b>OIL PRODUCTION (Gg/103M<sup>3</sup> SYNTHETIC CRUDE PRODUCTION FROM OILSANDS)</b>			
1.B.2.a.iii.2	SYNTHETIC CRUDE (FROM OILSANDS)	ND	0.0000023	ND

1.B.2.a.iii.2	SYNTHETIC CRUDE (OIL SHALE)	ND	ND	ND
1B2a	<b>OIL PRODUCTION (Gg/103M<sup>3</sup> TOTAL OIL PRODUCTION)</b>			
1.B.2.a.iii.2	DEFAULT TOTAL—FUGITIVES	0.00000028	0.0000022	N/A
1.B.2.a.i	DEFAULT TOTAL—VENTING	0.0000018	0.0000087	N/A
1.B.2.a.ii	DEFAULT TOTAL—FLARING	0.000034	0.000000021	0.00000000054
1B2a	<b>OIL UPGRADING (Gg/103M<sup>3</sup> OIL UPGRADED)</b>			
1.B.2.a.iii.2	ALL	ND	ND	ND
1B2a	<b>OIL TRANSPORT (Gg/103M<sup>3</sup> OIL TRANSPORTED BY PIPELINE)</b>			
1.B.2.a.iii.3	PIPELINES	0.00000000049	0.0000000054	N/A
1B2a	<b>OIL TRANSPORT (Gg/103M<sup>3</sup> OIL TRANSPORTED BY TANKER TRUCK)</b>			
1.B.2.a.i	TANKER TRUCKS AND RAIL CARS—VENTING	0.0000000023	0.000000025	N/A
	<b>OIL TRANSPORT (Gg/ 103M<sup>3</sup> OIL TRANSPORTED BY TANKER SHIPS)</b>			
1.B.2.a.i	LOADING OFF-SHORE PRODUCTION ON TANKER SHIPS—VENTING	ND	ND	ND
1B2a	<b>OIL REFINING (Gg/ 103M<sup>3</sup> OIL REFINED)</b>			
1.B.2.a.iii.4	ALL		2.60E-09 to 4.10E-08	ND

## SCHEDULE 1

**TABLE 3**  
**INDUSTRIAL PROCESSES AND PRODUCT USE (IPPU) EMISSION FACTORS**

IPCC Code	SOURCE CATEGORY ACTIVITY / RAW MATERIAL / PRODUCT	TONNE CO <sub>2</sub> / tonne product	TONNE CH <sub>4</sub> / tonne product	TONNE N <sub>2</sub> O/ tonne product	TONNE C <sub>2</sub> F <sub>6</sub> / tonne product	TONNE CF <sub>4</sub> / tonne product	TONNE SF <sub>6</sub> / tonne product
<b>2A1</b>	<b>CEMENT PRODUCTION (PER TONNE OF CLINKER)</b>						
	CEMENT	0.52					
<b>2A2</b>	<b>LIME PRODUCTION (PER TONNE OF LIME)</b>						
	QUICKLIME/HIGH CALCIUM LIME	0.75					
	DOLOMITIC LIME	0.77					
	HYDRATED LIME	0.59					
<b>2A3</b>	<b>GLASS PRODUCTION (PER TONNE GLASS)</b>						
	GLASS PRODUCTION	0.2					
<b>2A4</b>	<b>Other Process Uses of Carbonates</b>						
<b>2A4a</b>	<b>CERAMICS (PER TONNE CARBONATE)</b>						
	CALCITE/ARAGONITE (CaCO <sub>3</sub> )	0.43971					
	MAGNESITE (MgCO <sub>3</sub> )	0.52197					
	DOLOMITE (CaMg(CO <sub>3</sub> ) <sub>2</sub> ))	0.47732					
	SIDERITE (FeCO <sub>3</sub> )	0.37987					
	ANKERITE (Ca(Fe,Mg,Mn) (CO <sub>3</sub> ) <sub>2</sub> ))	0.40822 to 0.47572					
	RHODOCHROSITE (MnCO <sub>3</sub> )	0.38286					
	SODIUM CARBONATE/SODA ASH (Na <sub>2</sub> CO <sub>3</sub> )	0.41492					
<b>2A4b</b>	<b>OTHER USES OF SODA ASH (PER TONNE CARBONATE)</b>						
	CALCITE/ARAGONITE (CaCO <sub>3</sub> )	0.43971					
	MAGNESITE (MgCO <sub>3</sub> )	0.52197					
	DOLOMITE (CaMg(CO <sub>3</sub> ) <sub>2</sub> ))	0.47732					
	SIDERITE (FeCO <sub>3</sub> )	0.37987					

	ANKERITE (Ca(Fe,Mg,Mn) (CO <sub>3</sub> ) <sub>2</sub> ))	0.40822 to 0.47572					
	RHODOCHROSITE (MnCO <sub>3</sub> )	0.38286					
	SODIUM CARBONATE/SODA ASH (Na <sub>2</sub> CO <sub>3</sub> )	0.41492					
<b>2A4c</b>	<b>NON METALLURGICAL MAGNESIA PRODUCTION (PER TONNE CARBONATE)</b>						
	CALCITE/ARAGONITE (CaCO <sub>3</sub> )	0.43971					
	MAGNESITE (MgCO <sub>3</sub> )	0.52197					
	DOLOMITE (CaMg(CO <sub>3</sub> ) <sub>2</sub> ))	0.47732					
	SIDERITE (FeCO <sub>3</sub> )	0.37987					
	ANKERITE (Ca(Fe,Mg,Mn) (CO <sub>3</sub> ) <sub>2</sub> ))	0.40822 to 0.47572					
	RHODOCHROSITE (MnCO <sub>3</sub> )	0.38286					
	SODIUM CARBONATE/SODA ASH (Na <sub>2</sub> CO <sub>3</sub> )	0.41492					
<b>2A5</b>	<b>OTHER (PER TONNE CARBONATE)</b>						
	CALCITE/ARAGONITE (CaCO <sub>3</sub> )	0.43971					
	MAGNESITE (MgCO <sub>3</sub> )	0.52197					
	DOLOMITE (CaMg(CO <sub>3</sub> ) <sub>2</sub> ))	0.47732					
	SIDERITE (FeCO <sub>3</sub> )	0.37987					
	ANKERITE (Ca(Fe,Mg,Mn) (CO <sub>3</sub> ) <sub>2</sub> ))	0.40822 to 0.47572					
	RHODOCHROSITE (MnCO <sub>3</sub> )	0.38286					
	SODIUM CARBONATE/SODA ASH (Na <sub>2</sub> CO <sub>3</sub> )	0.41492					
<b>2B1</b>	<b>AMMONIA PRODUCTION (PER TONNE NH3)</b>						
	MODERN PLANTS- CONVENTIONAL REFORMING (NATURAL GAS)	1.694					
	EXCESS AIR REFORMING (NATURAL GAS)	1.666					
	AUTOTHERMAL REFORMING (NATURAL GAS)	1.694					
	PARTIAL OXIDATION	2.772					
	AVERAGE VALUE NATURAL GAS (MIXTURE OF MODERN & OLD)	2.104					
	AVERAGE VALUE (PARTIAL OXIDATION)	3.273					
<b>2B2</b>	<b>NITRIC ACID PRODUCTION (PER TONNE NITRIC ACID)</b>						
	PLANTS WITH NSCR (ALL PROCESSES)			0.002			
	PLANTS WITH PROCESS (INTEGRATED OR TAIL GAS NO2 DESTRUCTION)			0.0025			
	ATMOSPHERIC PRESSURE PLANTS (LOW PRESSURE PLANTS)			0.005			
	MEDIUM PRESSURE COMBUSTION PLANTS (MEDIUM PRESSURE)			0.007			
	HIGH PRESSURE PLANTS (HIGH PRESSURE)			0.009			
<b>2B3</b>	<b>ADIPIC ACID PRODUCTION (PER TONNE ADIPIC ACID UNCONTROLLED)</b>						
	NITRIC ACID OXIDATION (ADIPIC ACID)			0.3			
	<b>CAPROLACTAM, GLYOXAL</b>						

<b>2B4</b>	<b>AND GLYOXYLIC ACID PRODUCTION (PER TONNE PRODUCED)</b>						
	CAPROLACTAM PRODUCTION (RASCHIG)			0.009			
	GLYOXAL PRODUCTION			0.1			
	GLYOXYLIC ACID PRODUCTION			0.02			
<b>2B5</b>	<b>CARBIDE PRODUCTION (PER TONNE RAW MATERIAL USED)</b>						
	SILICON CARBIDE PRODUCTION	2.3	0.0102				
	PETROLEUM COKE USE	1.7					
<b>2B5</b>	<b>CARBIDE PRODUCTION (PER TONNE CARBIDE PRODUCED)</b>						
	SILICON CARBIDE PRODUCTION (CARBIDE PRODUCED)	2.62	0.0116				
	PETROLEUM COKE USE	1.09					
	USE OF PRODUCT	1.1					
<b>2B6</b>	<b>TITANIUM DIOXIDE PRODUCTION (PER TONNE PRODUCT)</b>						
	TITANIUM SLAG	NOT AVAILABLE					
	SYNTHETIC RUTILE	1.43					
	RUTILE TITANIUM DIOXIDE (CHLORIDE ROUTE)	1.34					
<b>2B7</b>	<b>SODA ASH PRODUCTION (PER TONNE OF SODA ASH OR TRONA)</b>						
	NATURAL SODA ASH OUTPUT	0.138					
	NATURAL SODA ASH (TRONA USED)	0.097					
<b>2B8</b>	PETROCHEMICAL AND CARBON BLACK PRODUCTION						
<b>2B8a</b>	<b>METHANOL PRODUCTION (PER TONNE METHANOL PRODUCED)</b>						
	CONVENTIONAL STEAM REFORMING WITHOUT PRIMARY REFORMER (NATURAL GAS FEEDSTOCK)	0.67	0.0023				
	CONVENTIONAL STEAM REFORMING WITH PRIMARY REFORMER (NATURAL GAS FEEDSTOCK)	0.497	0.0023				
	CONVENTIONAL STEAM REFORMING LURGI CONVENTIONAL PROCESS (NATURAL GAS FEEDSTOCK)	0.385	0.0023				
	CONVENTIONAL STEAM REFORMING LURGI CONVENTIONAL PROCESS (NATURAL GAS+CO <sub>2</sub> FEEDSTOCK)	0.267	0.0023				
	CONVENTIONAL STEAM REFORMING LURGI LOW PRESSURE PROCESS (NATURAL GAS FEEDSTOCK)	0.267	0.0023				
	CONVENTIONAL STEAM REFORMING LURGI COMBINED PROCESS (NATURAL GAS FEEDSTOCK)	0.396	0.0023				
	CONVENTIONAL STEAM REFORMING LURGI MEGA METHANOL PROCESS (NATURAL GAS FEEDSTOCK)	0.31	0.0023				
	PARTIAL OXIDATION PROCESS (OIL FEEDSTOCK)	1.376	0.0023				
	PARTIAL OXIDATION PROCESS (COAL FEEDSTOCK)	5.285	0.0023				

	PARTIAL OXIDATION PROCESS (LIGNITE FEEDSTOCK)	5.02	0.0023				
	CONVENTIONAL STEAM REFORMING WITH INTEGRATED AMMONIA PRODUCTION (NATURAL GAS FEEDSTOCK)	1.02	0.0023				
<b>2B8b</b>	<b><i>STEAM CRACKING ETHYLENE PRODUCTION (PER TONNE ETHYLENE PRODUCED)</i></b>						
	ETHYLENE (TOTAL PROCESS & ENERGY FEEDSTOCK USE)— NAPTHA	1.73	0.003				
	ETHYLENE (TOTAL PROCESS & ENERGY FEEDSTOCK USE)— GAS OIL	2.29	0.003				
	ETHYLENE (TOTAL PROCESS & ENERGY FEEDSTOCK USE)— ETHANE	0.95	0.006				
	ETHYLENE (TOTAL PROCESS & ENERGY FEEDSTOCK USE)— PROPANE	1.04	0.003				
	ETHYLENE (TOTAL PROCESS & ENERGY FEEDSTOCK USE)— BUTANE	1.07	0.003				
	ETHYLENE (TOTAL PROCESS & ENERGY FEEDSTOCK USE)— OTHER	1.73	0.003				
	ETHYLENE ( PROCESS FEEDSTOCK USE)— NAPHTHA	1.73	0.003				
	ETHYLENE ( PROCESS FEEDSTOCK USE)—GAS OIL	2.17	0.003				
	ETHYLENE ( PROCESS FEEDSTOCK USE)—ETHANE	0.76	0.006				
	ETHYLENE ( PROCESS FEEDSTOCK USE)— PROPANE	1.04	0.003				
	ETHYLENE ( PROCESS FEEDSTOCK USE)—BUTANE	1.07	0.003				
	ETHYLENE ( PROCESS FEEDSTOCK USE)—OTHER	1.73	0.003				
	ETHYLENE ( SUPPLEMENTAL FUEL-ENERGY FEEDSTOCK) USE—GAS OIL	0.12	0.003				
	ETHYLENE ( SUPPLEMENTAL FUEL-ENERGY FEEDSTOCK) USE—ETHANE	0.19	0.006				
<b>2B8c</b>	<b><i>ETHYLENE DICHLORIDE AND VINYL CHLORIDE MONOMER (PER TONNE EDC PRODUCED OR TONNE VCM PRODUCT PRODUCED)</i></b>						
	DIRECT CHLORINATION PROCESS (EDC)	0.191	0.0000226				
	OXYCHLORINATION PROCESS (EDC)	0.202	0.0000226				
	BALANCED PROCESS (DEFAULT)—EDC	0.196	0.0000226				
<b>2B8c</b>	<b><i>ETHYLENE DICHLORIDE AND VINYL CHLORIDE MONOMER (PER TONNE VCM PRODUCED OR TONNE VCM PRODUCT PRODUCED)</i></b>						
	DIRECT CHLORINATION PROCESS (EDC)	0.191	0.0000226				
	OXYCHLORINATION PROCESS (VCM)	0.302	0.0000226				
	BALANCED PROCESS (DEFAULT) -VCM	0.294	0.0000226				
<b>2B8d</b>	<b><i>ETHYLENE OXIDE (PER TONNE ETHYLENE OXIDE PRODUCED)</i></b>						
	AIR PROCESS (DEFAULT)— CATALYST DEFAULT (70)	0.863	0.00179				



	AIR PROCESS (DEFAULT)— CATALYST (75)	0.663	0.00179				
	AIR PROCESS (DEFAULT)— CATALYST (80)	0.5	0.00179				
	OXYGEN PROCESS (DEFAULT) —CATALYST DEFAULT (75)	0.663	0.00179				
	OXYGEN PROCESS— CATALYST (80)	0.5	0.00179				
	OXYGEN PROCESS— CATALYST (85)	0.35	0.00179				
	ALL ETHYLENE OXIDE PROCESSES—THERMAL TREATMENT	N/A	0.00079				
<b>2B8e</b>	<b>ACRYLONITRILE (PER TONNE ACRYLONITRILE PRODUCED)</b>						
	DIRECT AMMOXIDATION WITH SECONDARY PRODUCTS BURNED FOR ENERGY RECOVERY OR FLARED (DEFAULT)	1	0.00018				
	DIRECT AMMOXIDATION WITH ACETONITRILE BURNED FOR ENERGY RECOVERY OR FLARED	0.83	0.00018				
	DIRECT AMMOXIDATION WITH ACETONITRILE & HYDROGEN CYANIDE RECOVERED AS PRODUCT	0.79	0.00018				
<b>2B8f</b>	<b>CARBON BLACK PRODUCTION (PER TONNE CARBON BLACK PRODUCED)</b>						
	FURNACE BLACK PROCESS (DEFAULT)—Primary Feedstock	1.96	0.00006				
	THERMAL BLACK PROCESS— PRIMARY FEEDSTOCK	4.59	0.00006				
	ACETYLENE BLACK PROCESS— PRIMARY FEEDSTOCK	0.12	0.00006				
	FURNACE BLACK PROCESS (DEFAULT)—SECONDARY FEEDSTOCK	0.66	0.00006				
	THERMAL BLACK PROCESS— SECONDARY FEEDSTOCK	0.66	0.00006				
	ACETYLENE BLACK PROCESS— SECONDARY FEEDSTOCK	0.66	0.00006				
	FURNACE BLACK PROCESS (DEFAULT)—TOTAL FEEDSTOCK	2.62	0.00006				
	THERMAL BLACK PROCESS— TOTAL FEEDSTOCK	5.25	0.00 006				
	ACETYLENE BLACK PROCESS— TOTAL FEEDSTOCK	0.78	0.00006				
	ALL CARBON BLACK PROCESSES (NO THERMAL TREATMENT)	N/A	0.0287				
<b>2C1</b>	<b>IRON AND STEEL PRODUCTION (PER TONNE PRODUCT PRODUCED)</b>						
	SINTER PRODUCTION	0.2	0.00007				
	COKE OVEN	0.56	0.0000001				
	PIG IRON PRODUCTION	1.35					
	DIRECT REDUCED IRON (DRI) PRODUCTION	0.7	0.001/TJ (NG)				
	PELLET PRODUCTION	0.03					
	BASIC OXYGEN FURNACE	1.46					
	ELECTRIC ARC FURNACE	0.08					
	OPEN HEARTH FURNACE	1.72					
	GLOBAL AVERAGE	1.06					



<b>1A1c</b>	Fuels and Other Energy Industries	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2</b>	<b>Manufacturing Industries and Construction (including heat and electricity recovery from Waste)</b>		60	0	0	10	5	5	10	90
<b>1A2a</b>	Iron and Steel	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2b</b>	Non-Ferrous Metals	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2c</b>	Chemicals	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2d</b>	Pulp, Paper and Print	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2e</b>	Food Processing, Beverages and Tobacco	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2f</b>	Non-Metallic Minerals	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2g</b>	Transport Equipment	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2h</b>	Machinery	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2i</b>	Mining and Quarrying	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2j</b>	Wood and Wood Products	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2k</b>	Construction	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2l</b>	Textile and Leather	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A2m</b>	Brick manufacturing:	1 million bricks a month	60	0	0	10	5	5	10	90
<b>1A2n</b>	Manufacture of ceramic products by firing in particular roofing tiles, tiles, stoneware or porcelain	5 tonnes of production per day	60	0	0	10	5	5	10	90
<b>1A3</b>	<b>Transport</b>									
<b>1A3a</b>	Domestic Aviation	100 000 litres/year	75	0	0	0	5	5	10	95
<b>1A3b</b>	Road Transportation	N/A	75	0	0	0	0	5	10	90
<b>1A3c</b>	Railways	100 000 litres/year	75	0	0	0	0	5	10	90
<b>1A3d</b>	Water-borne Navigation	100 000 litres/year	75	0	0	0	0	5	10	90
<b>1A3e</b>	Other Transportation	N/A	75	0	0	0	0	5	10	90
<b>1A4</b>	<b>Other Sectors (including heat and electricity recovery from Waste)</b>									
<b>1A4a</b>	Commercial/Institutional	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A4b</b>	Residential	10 MW(th)	100	0	0	0	0	0	0	100
<b>1A4c</b>	Agriculture/Forestry/Fishing/Fish Farms	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A5</b>	<b>Non-Specified (including heat and electricity recovery from Waste)</b>									
<b>1A5a</b>	Stationary	10 MW(th)	60	0	0	10	5	5	10	90
<b>1A5b</b>	Mobile	N/A	60	0	0	10	5	5	10	90
<b>1A5c</b>	Multilateral Operations	N/A	60	0	0	10	5	5	10	90
<b>1B</b>	<b>Fugitive Emissions from Fuels</b>									
<b>1B1</b>	<b>Solid Fuels</b>									
<b>1B1a</b>	Coal Mining and Handling	none	60	0	10	10	5	5	5	95
<b>1B1ai</b>	Underground mines including flaring of drained methane (excluding abandoned mines)	none	60	0	10	10	5	5	5	95
<b>1B1aii</b>	Surface mines	none	60	0	10	10	5	5	5	95
<b>1B1b</b>	Uncontrolled Combustion, and Burning Coal Dumps	N/A	100	0	0	0	0	0	0	100
<b>1B1c</b>	Solid Fuel Transformation									
<b>1B1c1</b>	Coke production processes	none	60	0	10	10	5	5	5	95

<b>1B1c2</b>	Charcoal production processes	none	6 0	0	10	10	5	5	5	9 5
<b>1B1c3</b>	Any other solid fuel transformation involving fossil and organic carbon based fuels (e.g. biofuel productions)	none	6 0	0	10	10	5	5	5	9 5
<b>1B2</b>	<b>Oil and Natural Gas</b>									
<b>1B2a</b>	Oil	none	6 0	0	10	10	5	5	5	9 5
<b>1B2ai</b>	Venting	none	6 0	0	10	10	5	5	5	9 5
<b>1B2aii</b>	Flaring	none	6 0	0	10	10	5	5	5	9 5
<b>1B2aiii</b>	All other	none	6 0	0	10	10	5	5	5	9 5
<b>1B2b</b>	Natural Gas	none	6 0	0	10	10	5	5	5	9 5
<b>1B2bi</b>	Venting	none	6 0	0	10	10	5	5	5	9 5
<b>1B2bii</b>	Flaring	none	6 0	0	10	10	5	5	5	9 5
<b>1B2biii</b>	All other	none	6 0	0	10	10	5	5	5	9 5
<b>1B3</b>	<b>Other Emissions from Energy Production</b>									
<b>1B3a</b>	Coal-to-liquids processes	none	6 0	0	10	10	5	5	5	9 5
<b>1B3b</b>	Gas-to-liquids processes	none	6 0	0	10	10	5	5	5	9 5
<b>1B3c</b>	Gas-to-chemicals processes	none	6 0	0	10	10	5	5	5	9 5
<b>1C</b>	<b>Carbon Dioxide Transport and Storage</b>									
<b>1C1</b>	<b>Transport of CO<sub>2</sub></b>	none	6 0	0	10	10	5	5	5	9 5
<b>1C1a</b>	Pipelines	10 000 tons C O <sub>2</sub> /year	6 0	0	10	10	5	5	5	9 5
<b>1C1b</b>	Ships	10 000 tons C O <sub>2</sub> /year	6 0	0	10	10	5	5	5	9 5
<b>1C1c</b>	Other (please specify)	10 000 tons C O <sub>2</sub> /year	6 0	0	10	10	5	5	5	9 5
<b>1C2</b>	<b>Injection and Storage</b>									
<b>1C2a</b>	Injection	10 000 tons C O <sub>2</sub> /year	6 0	0	10	10	5	5	5	9 5
<b>1C2b</b>	Storage	10 000 tons C O <sub>2</sub> /year	6 0	0	10	10	5	5	5	9 5
<b>1C3</b>	<b>Other</b>	N/A	6 0	0	10	10	5	5	5	9 5
<b>2</b>	<b>INDUSTRIAL PROCESSES AND PRODUCT USE</b>									
<b>2A</b>	<b>Mineral Industry</b>									
<b>2A1</b>	Cement Production	none	6 0	10	0	10	5	5	5	9 5
<b>2A2</b>	Lime Production	none	6 0	10	0	10	5	5	5	9 5
<b>2A3</b>	Glass Production	none	6 0	10	0	10	5	5	5	9 5
<b>2A4</b>	<b>Other Process Uses of Carbonates</b>		6 0	10	0	10	5	5	5	9 5
<b>2A4a</b>	Ceramics	50 tonnes of production a month	6 0	10	0	10	5	5	5	9 5
<b>2A4b</b>	Other Uses of Soda Ash	50 tonnes of production a month	6 0	10	0	10	5	5	5	9 5
<b>2A4c</b>	Non Metallurgical Magnesia Production	none	6 0	10	0	10	5	5	5	9 5
<b>2A4d</b>	Other (please specify)	20 tonnes of production a month	6 0	10	0	10	5	5	5	9 5
<b>2A5</b>	<b>Other (please specify)</b>	N/A	6 0	0	0	10	5	5	10	9 0
<b>2B</b>	<b>Chemical Industry</b>									
<b>2B1</b>	Ammonia Production	none	6 0	10	0	10	5	5	5	9 5

<b>2B2</b>	Nitric Acid Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B3</b>	Adipic Acid Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B4</b>	Caprolactam, Glyoxal and Glyoxylic Acid Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B5</b>	Carbide Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B6</b>	Titanium Dioxide Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B7</b>	Soda Ash Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B8</b>	<b>Petrochemical and Carbon Black Production</b>									
<b>2B8a</b>	Methanol	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B8b</b>	Ethylene	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B8c</b>	Ethylene Dichloride and Vinyl Chloride Monomer	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B8d</b>	Ethylene Oxide	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B8e</b>	Acrylonitrile	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B8f</b>	Carbon Black	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B8g</b>	Hydrogen Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B9</b>	<b>Fluorochemical Production</b>									
<b>2B9a</b>	By-product Emissions	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B9b</b>	Fugitive Emissions	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2B10</b>	Other (Please specify)	20 tonnes of production a month	6 0	1 0	0	1 0	5	5	5	9 5
<b>2C</b>	<b>Metal Industry</b>									
<b>2C1</b>	Iron and Steel Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2C2</b>	Ferroalloys Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2C3</b>	Aluminium Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2C4</b>	Magnesium Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2C5</b>	Lead Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2C6</b>	Zinc Production	none	6 0	1 0	0	1 0	5	5	5	9 5
<b>2C7</b>	Other (please specify)	50 tonnes of production a month	6 0	0	0	1 0	5	5	1 0	9 0
<b>2D</b>	<b>Non-Energy Products from Fuels and Solvent Use</b>									
<b>2D1</b>	Lubricant Use	N/A	6 0	0	0	1 0	5	5	1 0	9 0
<b>2D2</b>	Paraffin Wax Use	N/A	6 0	0	0	1 0	5	5	1 0	9 0
<b>2D3</b>	Solvent Use	N/A	6 0	0	0	1 0	5	5	1 0	9 0
<b>2D4</b>	Other (please specify)	N/A	6 0	0	0	1 0	5	5	1 0	9 0
<b>2E</b>	<b>Electronics Industry</b>									
<b>2E.1</b>	Integrated Circuit or Semiconductor	N/A	6 0	0	0	1 0	5	5	1 0	9 0
<b>2E.2</b>	TFT Flat Panel Display	N/A	6 0	0	0	1 0	5	5	1 0	9 0
<b>2E.3</b>	Photovoltaics	N/A	6 0	0	0	1 0	5	5	1 0	9 0
<b>2E.4</b>	Heat Transfer Fluid	N/A	6 0	0	0	1 0	5	5	1 0	9 0
<b>2E.5</b>	Other (please specify)	N/A	6 0	0	0	1 0	5	5	1 0	9 0
<b>2F</b>	<b>Product Uses as Substitutes for Ozone Depleting Substances</b>									
<b>2F1</b>	<b>Refrigeration and Air Conditioning</b>									
<b>2F1a</b>	Refrigeration and Stationary Air Conditioning	N/A	6 0	0	0	1 0	5	5	1 0	9 0
<b>2F1b</b>	Mobile Air Conditioning	N/A	6 0	0	0	1 0	5	5	1 0	9 0

2F2	Foam Blowing Agents	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2F3	Fire Protection	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2F4	Aerosols	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2F5	Solvents	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2F6	Other Applications (please specify)	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2G	Other Product Manufacture and Use									
2G1	Electrical Equipment									
2G1a	Manufacture of Electrical Equipment	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2G1b	Use of Electrical Equipment	5 0 kilograms of production per year	6 0	0	0	1 0	5	5	1 0	9 0
2G1c	Disposal of Electrical Equipment		6 0	0	0	1 0	5	5	1 0	9 0
2G2	SF <sub>6</sub> and PFCs from Other Product Uses	N/A								
2G2a	Military Applications	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2G2b	Accelerators	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2G2c	Other (please specify)	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2G3	N <sub>2</sub> O from Product Uses	N/A								
2G3a	Medical Applications	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2G3b	Propellant for Pressure and Aerosol Products	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2G3c	Other (Please specify)	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2G4	Other (Please specify)	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2H	Other									
2H1	Pulp and Paper Industry	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2H2	Food and Beverages Industry	N/A	6 0	0	0	1 0	5	5	1 0	9 0
2H3	Other (please specify)	N/A	6 0	0	0	1 0	5	5	1 0	9 0
3	AGRICULTURE, FORESTRY, AND OTHER LAND USE									
3A	Livestock									
3A1	Enteric Fermentation									
3A1a	Cattle	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A1b	Buffalo	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A1c	Sheep	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A1d	Goats	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A1e	Camels	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A1f	Horses	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A1g	Mules and Asses	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A1h	Swine	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A1j	Other (please specify)	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A2	Manure Management									
3A2a	Cattle	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A2b	Buffalo	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A2c	Sheep	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A2d	Goats	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A2e	Camels	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A2f	Horses	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A2g	Mules and Asses	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A2h	Swine	N/A	1 0 0	0	0	0	0	0	0	1 0 0
3A2i	Poultry	40 000 places for poultry	1 0 0	0	0	0	0	0	0	1 0 0

<b>3A2j</b>	Other (please specify)	N/A	100	0	0	0	0	0	0	100
<b>3B</b>	<b>Land</b>									
<b>3B1</b>	<b>Forest Land</b>									
<b>3B1a</b>	Forest land Remaining Forest Land	100 Hectares of Plantations or Natural forests	100	0	0	0	0	0	0	100
<b>3B1b</b>	Land Converted to Forest Land	100 Hectares of Plantations or Natural forests	100	0	0	0	0	0	0	100
<b>3B2</b>	<b>Cropland</b>									
<b>3B2a</b>	Cropland Remaining Cropland	N/A	100	0	0	0	0	0	0	100
<b>3B2b</b>	Land Converted to Cropland	N/A	100	0	0	0	0	0	0	100
<b>3B3</b>	<b>Grassland</b>									
<b>3B3a</b>	Grassland Remaining Grassland	N/A	100	0	0	0	0	0	0	100
<b>3B3b</b>	Land Converted to Grassland	N/A	100	0	0	0	0	0	0	100
<b>3B4</b>	<b>Wetlands</b>									
<b>3B4a</b>	Wetlands Remaining Wetlands	N/A	100	0	0	0	0	0	0	100
<b>3B4b</b>	Land Converted to Wetlands	N/A	100	0	0	0	0	0	0	100
<b>3B5</b>	<b>Settlements</b>									
<b>3B5a</b>	Settlements Remaining Settlements	N/A	100	0	0	0	0	0	0	100
<b>3B5b</b>	Land Converted to Settlements	N/A	100	0	0	0	0	0	0	100
<b>3B6</b>	<b>Other Land</b>									
<b>3B6a</b>	Other Land Remaining Other Land	N/A	100	0	0	0	0	0	0	100
<b>3B6b</b>	Land Converted to Other Land	N/A	100	0	0	0	0	0	0	100
<b>3C</b>	<b>Aggregate Sources and Non-CO<sub>2</sub> Emissions Sources on Land</b>									
<b>3C1</b>	<b>Emissions from Biomass Burning</b>									
<b>3C1a</b>	Biomass Burning in Forest Lands	100 Hectares of plantations	100	0	0	0	0	0	0	100
<b>3C1b</b>	Biomass Burning in Croplands	N/A	100	0	0	0	0	0	0	100
<b>3C1c</b>	Biomass Burning in Grasslands	N/A	100	0	0	0	0	0	0	100
<b>3C1d</b>	Biomass Burning in All Other Land	N/A	100	0	0	0	0	0	0	100
<b>3C2</b>	Liming	N/A	100	0	0	0	0	0	0	100
<b>3C3</b>	Urea Application	N/A	100	0	0	0	0	0	0	100
<b>3C4</b>	Direct N <sub>2</sub> O Emissions from Managed Soils	100 Hectares of plantations	100	0	0	0	0	0	0	100
<b>3C5</b>	Indirect N <sub>2</sub> O Emissions from Managed Soils	100 Hectares of plantations	100	0	0	0	0	0	0	100
<b>3C6</b>	Indirect N <sub>2</sub> O Emissions from Manure Management	N/A	100	0	0	0	0	0	0	100
<b>3C7</b>	Rice Cultivations	N/A	100	0	0	0	0	0	0	100
<b>3C8</b>	Other (please specify)	N/A	100	0	0	0	0	0	0	100
<b>3D</b>	<b>Other</b>									
		Harvested Wood Products produced from timber								

3D1	Harvested Wood Products	harvested from forest owners registered for reporting under IPCC code 3B1a and 3B1b	100	0	0	0	0	0	0	100
3D2	Other (please specify)	N/A	100	0	0	0	0	0	0	100
4	<b>WASTE</b>									
4A	<b>Solid Waste Disposal</b>									
4A1	Managed Waste Disposal Sites	Receiving 5 tonnes per day or a total capacity of 25000 tonnes	100	0	0	0	0	0	0	100
4A2	Unmanaged Waste Disposal Sites	Receiving 5 tonnes per day or a total capacity of 25000 tonnes	100	0	0	0	0	0	0	100
4A3	Uncategorised Waste Disposal Sites	Receiving 5 tonnes per day or a total capacity of 25000 tonnes	100	0	0	0	0	0	0	100
4B	<b>Biological Treatment of Solid Waste</b>	N/A	100	0	0	0	0	0	0	100
4C	<b>Incineration and Open Burning of Waste</b>									
4C0	Waste – Pyrolysis	100 kg/hour	100	0	0	0	0	0	0	100
4C1	Waste Incineration	1 tonne per hour	60	0	0	10	5	5	10	90
4C2	Open Burning of Waste	N/A	100	0	0	0	0	0	0	100
4D	<b>Wastewater Treatment and Discharge</b>									
4D1	Domestic Wastewater Treatment and Discharge	2 Million litres/day	100	0	0	0	0	0	0	100
4D2	Industrial Wastewater Treatment and Discharge	1000 cubic metres per day	100	0	0	0	0	0	0	100
4E	<b>Other (please specify)</b>	N/A								
5	<b>OTHER</b>									
5A	<b>Indirect N<sub>2</sub>O Emissions from the Atmospheric Deposition of Nitrogen in NO<sub>x</sub> and NH<sub>3</sub></b>	N/A	60	0	0	10	5	5	10	90
5B	<b>Other (please specify)</b>	None	60	0	0	10	5	5	10	90

### SCHEDULE 3

(Section 20.)

**1. Amendment of section 1 of Act 91 of 1964, as amended by section 1 of Act 95 of 1965, section 1 of Act 57 of 1966, section 1 of Act 105 of 1969, section 1 of Act 98 of 1970, section 1 of Act 71 of 1975, section 1 of Act 112 of 1977, section 1 of Act 110 of 1979, sections 1 and 15 of Act 98 of 1980, section 1 of Act 89 of 1984, section 1 of Act 84 of 1987, section 32 of Act 60 of 1989, section 51 of Act 68 of 1989, section 1 of Act 59 of 1990, section 1 of Act 19 of 1994, section 34 of Act 34 of 1997, section 57 of Act 30 of 1998, section 46 of Act 53 of 1999, section 58 of Act 30 of 2000, section 60 of Act 59 of 2000, section 113 of Act 60 of 2001, section 131 of Act 45 of 2003, section 66 of Act 32 of 2004, section 85 of Act 31 of 2005, section 7 of Act 21 of 2006, section 10 of Act 9 of 2007, section 4 of Act 36 of 2007, section 22 of Act 61 of 2008 and section 1 of Act 32 of 2014.—Section 1 of the Customs and Excise Act, 1964, is hereby amended by the insertion in subsection (1) after the definition of “bulk goods terminal operator” of the following definition:**

“ ‘Carbon Tax Act’ means an Act of Parliament that makes provision for a carbon tax;”.

**2. Amendment of section 54A of Act 91 of 1964, as inserted by section 139 of Act 45 of 2003 and renumbered by**



section 32 of Act 16 of 2004.—The following section is hereby substituted for section 54A of the Customs and Excise Act, 1964:

**“ Imposition of environmental levy**

**54A.** A levy known as the environmental levy shall be—

- (a) leviable on such imported goods and goods manufactured in the Republic as may be specified in any item of Part 3 of Schedule No.1; and
- (b) collected and paid in respect of carbon tax imposed in terms of the Carbon Tax Act, 2019.”.